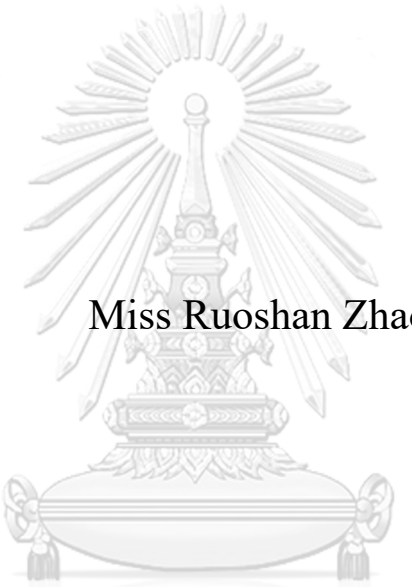
POVERTY AND ELDERLY LABOR SUPPLY IN THAILAND

Miss Ruoshan Zhao



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วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรมหาบัณฑิต
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หรั่วฉาน จาว : ความยากจนและการจัดหาแรงงานผู้สูงอายุในประเทศไทย. (POVERTY AND ELDERLY LABOR SUPPLY IN THAILAND) อ.ที่ปรึกษาหลัก : เจสสิกา เวชบรรยงรัตน์

จุดมุ่งหมายของการศึกษานี้คือการประเมินผลกระทบของความยากจนต่อการมีส่วนร่วมของแรงงานสูงอายุและศึกษาความสัมพันธ์ระหว่างความยากจนกับความเข้มข้นของการทำงาน (เช่น จำนวนวันทำงาน) การจัดหาแรงงานผู้สูงอายุเป็นหนึ่งในปัญหามากที่สุดในประเทศกำลังพัฒนา จากการศึกษาเกี่ยวกับผู้สูงอายุ นักวิจัยได้ค้นพบความสำคัญเกี่ยวกับอัตราการมีส่วนร่วมในแรงงานของผู้สูงอายุ อย่างไรก็ตาม ยังขาดการวิจัยเกี่ยวกับความสัมพันธ์ระหว่างอัตราการมีส่วนร่วมของกำลังแรงงานกับความยากจนของผู้สูงอายุในประเทศไทย การศึกษานี้ใช้แบบจำลองการถดถอยของโพรบิทและแบบจำลองการถดถอยของโทบิท พบว่าผลกระทบของความยากจนต่อการมีส่วนร่วมของแรงงานและความเข้มข้นของการทำงานแสดงให้เห็นความสัมพันธ์เชิงบวก ผู้สูงอายุมีแนวโน้มที่จะมีส่วนร่วมในการใช้แรงงานเนื่องจากรายได้เพิ่มขึ้น และผู้สูงอายุที่อาศัยอยู่ใน ความยากจนทำงานน้อยลง การค้นพบนี้สามารถสนับสนุนกา รพัฒนาเพิ่มเติมของนโยบายเงินอุด หนุนผู้สูงอายุของรัฐบาลเพื่อปรับปรุงสถานะรายได้ของผู้สูงอายุ ลดอัตราการเข้าร่วมแรงงาน และปรับปรุงดัชนีความสุขของผู้สูงอายุในปีต่อ ๆ ไป

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6284078429 : MAJOR LABOUR ECONOMICS AND HUMAN RESOURCE MANAGEMENT
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Ruoshan Zhao : POVERTY AND ELDERLY LABOR SUPPLY IN THAILAND. Advisor: Assoc. Prof. JESSICA VECHBANYONGRATANA, Ph.D.

The aim of this study was to estimate the impact of poverty on elderly labor force participation and investigate the relationship between poverty and the intensity of work (i.e., working days). Labor supply by the elderly is increasingly one of the most concerning issues in developing countries. Based on studies on the elderly, researchers have made significant findings regarding the labor participation rates of older adults. However, there is a lack of research on the relationship between the labor force participation rate and poverty among the elderly in Thailand. This study used the probit regression model and Tobit regression model and found that the impact of poverty on both labor participation and work intensity showed positive relationships. The elderly is more likely to participate in labor as their income increases, and older people living in poverty work fewer hours. These findings can support the further development of the government's elderly subsidy policy to improve the income status of the elderly, reduce their labor participate rate and improve the happiness index of the elderly in their later years.

Field of Study:	Labour Economics and Human Resource Management	Student's Signature .....
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Finally, I would like to thank myself for my decision to come to Chulalongkorn University and Thailand. Every day of studying here makes me feel extremely happy, and I still remember the excitement when I received the offer. I hope that in the future, I can continue to carry this passion, never forget my original intention, and move forward bravely.

Ruoshan Zhao

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Chapter 1 Introduction

1.1 Background

Based on World Population Prospects (2019). In most parts of the world, survival rates beyond age 65 are increasing. Globally, people aged 65 in 2015-2020 could live an average of 17 years longer. Traditional indicators of population aging based on actual age (years since birth), with a fixed threshold of 65 years for "old age," suggest that populations are aging in all regions of the world. The new measure of population aging based on age expectancy (remaining life expectancy) has a dynamic threshold of "old age" that rises gradually with increasing life expectancy, indicating that the population is aging more slowly than the traditional measure would suggest. For example, the expected old-age dependency ratio rises more slowly than the old-age dependency ratio in all regions of the world.

Due to low birth rates, long life expectancy, and the aging of the baby boomers, the number of older people is growing rapidly in many countries around the world, especially in developed countries such as Italy, Japan, and Germany. World Population Prospects (2019) indicates that East and Southeast Asia and Latin America and the Caribbean are experiencing the fastest rates of population aging. The proportion of people aged 65 or older has almost doubled in East and Southeast Asia, from 6 percent in 1990 to 11percent in 2019. As a developing country, Thailand's elderly population faces the same population aging as developed countries. According to the Report on the 2017 survey of the old person in Thailand (2017), in recent years, the proportion of senior citizens has increased significantly, approaching 16.7 percent in 2017, which means that Thailand has become the five cities with the most elderly people are:

Nakhon Ratchasima, Khon Kaen, Chiang Mai, Ubon Ratchathani and Nakhon Si Thammarat. Five cities with the least elderly people are: Ranong,Mae Hong Son,Satun and Phang Nga (Report,2019).

In addition, another issue that deserves our attention is poverty in Thailand. According to report from NESDC, the poverty rate in Thailand dropped from 20.43 percent in 2007 to 7.87 percent in 2017. According to a Rural Income Diagnostic launched by the World Bank, Thailand has seen a marked decline in poverty, driven by high growth rates and structural transformation, with 79 percent of the poor remaining in rural areas, mainly farming households. Among them, South and Northeast are particularly prominent, almost double the national level.

1.2 Introduction

Population aging has the potential to become one of the most important social trends of the 21st century, affecting almost all areas of society, including labor and financial markets, demand for goods and services (e.g., housing, transportation and social security), family and intergenerational structural relationships. Older persons are increasingly seen as contributors to development, and their ability to act for the betterment of themselves and their communities should be integrated into policies and programs at all levels. In the coming decades, many countries are likely to face fiscal and political pressures related to public healthcare systems, pensions and social security to accommodate growing aging populations. Therefore, the main factors affecting the labor force participation rate of the elderly have become a subject worth studying. The existing literature pays more attention to the relationship between pension or health status and the labor force of the elderly, or to study the factors that lead to poverty.

There is a lack of research on the relationship between poverty and labor supply in specific groups, so in order to make up for this vacancy, this paper takes the elderly over 60 years old as the research object, estimates the impact of poverty on the labor force participation rate of the elderly, and examines the relationship between poverty and work intensity, and draws a conclusion to confirm the link between the poverty of the elderly and labor supply , supplementing the relevant research on the factors affecting the labor supply of the elderly. Policymakers can also develop targeted incentives to reduce poverty and increase labor force participation.

1.3 Research Questions

There are two main questions addressed in this thesis:

- Is there an impact of poverty on elderly labor force participation?
- Is there have relationship between poverty and the intensity of work (working days)?

1.4 Objectives of Study

The objectives of the study are as follows:

1. To estimate impact of the poverty on elderly labor force participation.
2. To investigate relationship between poverty and the intensity of work (i.e., working days).

1.5 Scope of Study

For this study, I use the survey of the old person from the National Statistics Office of Thailand. I collected data from 2007 to 2017.To find changes and relationships between poverty and labor force participation. This survey is very detailed, collecting all kinds of information about the elderly, which can meet my research needs. This study, focus on senior citizen over 60 years old. And I will do the analysis to measure poverty by income, then compare the lowest income group and highest income group, try to find the connection between poverty and labor participation of the elderly.

From the survey, I use old person survey to calculate the income for the elderly. And collect the following data to analyze the change and relationship between poverty and labor participation: income, age, education level, health status, gender, pension and allowance, supporting children or not, living region, savings and residing situation.

1.6 Definition

Poverty: The World Bank reported that, the average poverty line in 2020 was 2,762 Baht per person per month. The National Economic and Social Development Center (NESDC) defied the national poverty line at approximately 30,000 Baht per person per year. Therefore, in this paper, the annual personal income is divided into two groups. When an individual's average annual income is less than 30000 Thai baht, the individual is considered as poverty group; If an individual's annual income exceeds 30000 Thai baht, the individual is considered as non-poverty group.

Labor Supply: Labor participates, work intensity (Work Day per week).

Elderly labor: Based on legal retirement age in Thailand, this paper chooses the elderly who over 60 years old and still engaged in the work force on a weekly basis.

1.7 Organization of Study

This research is divided into five chapters. The first chapter is the introduction, including the background, statement of the problem, the research question, the research objectives and the scope of the research. Chapter 2 empirical literature on poverty and older labor supply in Thailand. Next, Chapter 3 presents the theoretical framework, research methods, and data sources. Chapters 4 report the results of estimation, econometrics, and data analysis. Finally, Chapter 5 presents conclusions and implications for Thailand's poverty and older workforce supply, giving the Thai government some recommendations to formulate policies on older persons and prepare for possible future workforce ageing crises.

Chapter 2 Literature Review

Based on current country-by-country research can finds that an ageing population and excessive participation in the older workforce are widespread. The problem of aging society mainly occurs in developed countries, and some developing countries such as Thailand are also facing the same problem. However, the circumstances and factors of the problem of aging societies and older workforce participation vary from country to country.

As we know the labor force participation rate of the elderly is not only affected by factors such as retirement age, family wealth, health status, pension system, etc., but also by family structure and economic conditions. So, in this section I will review literatures which researched base on Thailand and other countries on health conditions, illness, income situation, social security system, pensions system.

2.1 Health conditions and illnesses

With the continuous increase of age, the elderly is accompanied by various diseases. Health conditions and illnesses are one of the main factors affecting the participation of older labor forces, so for the elderly who want to continue working, health issues and whether their bodies can withstand work must be the primary consideration. In this part, I will review some articles on the impact of health problems on older adults.

Cockerham, Sharp and Wilcox (1983) using a probability sample of 660 adults in Illinois of American discovered that in general, labor force participation decreases with age, and advanced age tends to limit the activities of daily living that people can

perform (eating, dressing, toileting, bathing, sitting up, etc.) .And after researched from India situation, Ghosh and Arokiasamy (2010) pointed out that the health status of older persons plays a crucial role in determining whether they participate in the workforce. As older adults suffer from chronic diseases and different types of disabilities, their workforce participation is severely impacted. The same result from Alaviniz and Burdorf (2008) pointed that, in many European countries, poor health, chronic diseases and lifestyle factors were associated with withdrawal from the labor market.

In terms of Thailand case. Thailand has a survey by NSO every 4 years, a nationally representative survey conducted by the National Statistics Office (NSO), which collected information on the socioeconomic conditions and living arrangements, employment and income, health status, and health behaviors of the elderly in Thai society. Adhikari, Soonthorndhada, and Haseen (2011) use this survey of 2007, investigated that the labor force participation rate and factors affecting labor force participation among people aged 60 and above in Thailand. They result shows that more than one-third (35percent) of respondents participate in the labor market and that men have a higher labor force participation rate than women. Although in the study it was found that age, economic situation and multiple functional impairments limit the participation of older adults in the workforce. People who experience greater difficulties in their daily lives, suffer from more chronic diseases, and report being in poor health are less likely to enter the workforce. But in Thailand, a large number of elderly people with one or more chronic diseases are still working. Data limitations prevented this study from examining the relationship between other important factors and labor force participation in the elderly population, such as income security program

coverage, pensions, per capita income, decisions to participate in the labor force, and respondents' quality of life.

2.2 Poverty

Poverty can directly impact labor supply through the income effect (Allen, 2020). When individuals or households are living in poverty, they often have lower incomes and struggle to meet their basic needs. In such circumstances, there is a stronger incentive to participate in the labor market to earn income and improve their financial situation. The need to escape poverty and secure a stable source of income can drive individuals to increase their labor supply by seeking employment or working longer hours. Poverty can also affect labor supply through the substitution effect (Dessing, 2002). The substitution effect refers to the trade-off between work and leisure. For individuals living in poverty, the opportunity cost of leisure time is higher due to the urgent need to generate income. As a result, they may be more inclined to increase their labor supply and work longer hours, sacrificing leisure time to earn wages and improve their economic conditions. The structure of the labor market can also influence the relationship between poverty and labor supply (Barbier, 2010). In economies with limited job opportunities, individuals living in poverty may face challenges in finding suitable employment. This can result in high unemployment rates and underemployment, leading to lower labor force participation among the impoverished population. Structural factors such as inadequate job creation, limited access to formal employment, and discrimination can exacerbate the poverty-labor supply relationship.

For the elderly, after retirement at the age of 60, the income situation becomes a concern. The main sources of income for the elderly are pensions, interest on deposits and child support. However, many times these incomes are not sufficient to cover basic living expenses. In addition, many seniors do not have any other source of income other than pensions, so they are forced to live on tight budgets, and many people have to choose to continue to work. This phenomenon is particularly evident in developing countries.

In 2003, a study by Barrientos, A., Gorman, M., & Heslop, A. (2003) confirmed this opinion they use data survey and some qualitative participatory studies to show that poverty of the elderly is a significant issue in developing country, in this paper, find that the relationship between age and poverty shows a "U" shape, it means poverty is a very significant issue among the younger and older group.

Zaidi et al. (2006) studied the EU country's pension policy from 1995 to 2005, and found that the poverty rate is affected by the pension policy, and the reduction in the proportion of pension benefits will lead to a sharp increase in the poverty rate, Similarly, the research of Rissanen and Ylinen (2014) also confirms this point of view, the main problems leading to the poverty of the elderly are partly related to various welfare reforms, and the findings show that women, single, low education, working short life spans and poor health are fairly obvious indicators of poverty. Vu, L. H., & Nguyen, T.-A. (2021) found that older people living in rural areas are more likely to fall into poverty than those living in cities through a study of the elderly in Vietnam, and found that region, ethnicity, education, and family age composition are the decisive factors affecting the poverty of the elderly. In terms of Thailand, Suwanrada (2008) pointed out in a research report that children are an important source of economic

security for the elderly, but as the support ratio decreases, the economic income of the elderly will decrease. This also means that if the coverage of pension policies is not complete, the poverty rate of the elderly will increase. To sum up, all the above studies on poverty mention the impact of pensions on poverty among the elderly. However, it is rarely mentioned what impact the poverty rate will have on the elderly.

Therefore, in this article, I will research on the relationship between the poverty of the elderly and labor supply, as to provide further data support for relevant institutions and formulate policies to help the elderly policies to lift people out of poverty.

2.3 Education

The relationship between education level and labor supply is a subject of significant interest and research. Numerous studies have shown a strong positive correlation between higher levels of education and increased labor supply (Acemoglu & Autor, 2011; Belfield, & Levin, 2017). As individuals acquire higher levels of education, they tend to have access to a broader range of employment opportunities, leading to a larger labor supply. Moreover, higher education levels are often associated with specialized skills and knowledge that are in demand in the labor market, making educated individuals more attractive to employers. Additionally, Oreopoulos & Salvanes (2011) pointed out that individuals with higher levels of education are more likely to engage in continuous learning, enabling them to adapt to changing job market demands and maintain their labor supply over time. These findings underscore the importance of education in fostering a skilled and adaptable workforce.

2.4 Gender

The impact of gender on the employment of older persons is an important issue. There are many factors contributing to this effect, including cultural norms and stereotypes, as well as the physical and mental capabilities of older adults. Gender norms and stereotypes are an important factor in the employment of older persons. In many cultures, women are expected to retire from paid employment when they reach a certain age, while men are expected to continue working. Because they may be perceived as capable parts of their energies that need to be distracted from caring for the family and unable to concentrate on work, this may lead employers to be reluctant to hire older women.

Clark and Anker (1990) focus on old people who are aged 65 and over, explore their labor participation rate across nations are use data from 151 countries, it found that in Europe nations, the older men's labor participation rate is lower than in other regions. In terms of old women, there are the lowest participation rates in European countries and the Islamic nations of North Africa. In summary, with economic development, the labor participation rate indicates a general decline.

Similarly, Clark, York and Anker (1999) also focus on the effect of economic development on the labor participation rate of the elderly, they use data from 134 countries, then found a negative relationship between labor force participation rate and per capita income, it is more significant for old men in middle income country. A higher widow rate leads higher labor participation rate of old women. In terms of industry, the decline in the proportion of the agricultural workforce has reduced the proportion of the elderly in the Labor force.

2.5 Social security and pensions

There are a number of factors that affect an individual's decision to participate in the workforce after retirement, and social security and pension benefits are two of the most significant. Social security provides a guaranteed income for retirees, while pension benefits can provide additional income. Both of these factors can influence an individual's decision to stay in the workforce or to retire. If an individual receives a large social security payment, they may be more likely to retire, while a smaller payment may incentivize them to stay in the workforce.

Population aging is common in developed countries. Cooke (2006) review the different policies from 6 countries- Canada, Australia, Germany, the Netherlands, the United Kingdom and the United States. They find that the change is unlikely to increase the participation of the elderly in the labor market, in some cases, put older workers at greater risk of low pay and unemployment or low-wage jobs. In another developed country Japan, it has also been promoting the reform of its social security system in recent years. Takashi, Akiko sato, and Satoshi (2011) used publicly available data to present the impact of social security on the labor force participation rate of the elderly in Japan over the past 40 years. show that since 1985, social security reforms have resulted in older adults staying in the labor market longer than before. Research shows that measures to reduce social security generality can increase labor force participation among older adults.

Compared with developed countries, developing country lacks a complete and universal social security system. In developing countries, social security generally covers formal sector workers, while a large proportion of the workforce is not covered (Giles et al., 2011).

In the case of Thailand, Suwanrada (2008) raises issues related to the Thai pension debate, as the middle-aged pension system provides little support for the uninsured and poor elderly. Therefore, the Thai government has begun to take measures to deal with the problem of excessive participation of the elderly in the labor force due to the poor economic status of the elderly. It is responding to the current problem by improving the national social security for the elderly and increasing the income of the elderly. Jitapunkul and Wivatvanit (2009) reviewed the Thai government's elderly policy over the past 20 years and there is growing evidence that the government can and should play an active role in promoting the welfare of the elderly in an aging country.

In recent years, the Thai government has also taken measures to help increase the income of the elderly, such as through the Older Persons Act (2003), the implementation of the Old Age Allowance (2009), and the National Savings Fund (2015).

Although the Thai government has taken certain measures. However, except for the universal program, all other pension programs available for informal workers are on a voluntary basis. The level of allowances granted by the government is low and has little significant impact on older workers (Paweenawat and Vechbanyongratana 2015). In fact, the majority of older people in the informal sector still cannot afford to join those voluntary programs. Until the end of 2017, the National Savings Fund had only approximately 546,000 members (NSF 2017). Based on current data from Thailand and other countries with similar programs in the past data show that current policies primarily help wealthy people in the informal sector (World Bank, 2012).

Paweenawat and Liao (2021) used LFS and SES data to investigate the labor supply and the impact of pension, health and co-living status on their labor force participation in the elderly in Thailand. The findings suggest a strong association between pensions and labor supply in older adults. Pension status affects people living in rural areas less than it does for people living in urban areas, and less for people with less education. The findings suggest that older people with lower economic status, especially those in the informal sector, may be affected by insufficient government support, allowing them to continue working in order to survive. In addition, research has shown that LFP in older adults is negatively affected by living with family members, suggesting that a lack of public support and other social assistance often leads them to become more dependent on their children.

Based on the above research on the elderly, researchers have made significant findings regarding the labor participation rates of older adults. However, there is a lack of research on the relationship between labor force participation rate and poverty among the elderly in Thailand. Gabr (2016) research about the labor force in Egypt which is a developing country same as Thailand, investigate the relationship between poverty and labor force participation. He found that poverty is endogenous to labor force participation, and have significant difference among different provinces. Because of the endogenous of poverty, according to the Endogeneity test for poverty and labor force participation, the relationship between poverty and labor participation is negative.

Thence, I want to further use Thailand's data to study the relationship between the elderly's poverty and labor force participation. I think this is a very important research topic, because the elderly is a very vulnerable group in society. They are often

poor and have little labor force participation. I hope that through this research, we can better understand the elderly's situation and help them improve their lives.

Chapter 3 Methodology and Data

3.1 Research methods

In this study, I will estimate the impact of poverty on elderly labor force participation and investigate the relationship between poverty and the intensity of work (i.e., working days). To estimate the impact of poverty on elderly labor force participation, I will use the probit regression model. In this regression, whether joined to the labor market is the dependent variable, where LFP is an indicator that equals 1 if individual participates in the labor force, and 0 otherwise, and independent variables include income, age, education level, health status, gender, pension and allowance, supporting children or not, living region, savings and residing alone or not. More details are shown in Table 1.

$$\Pr\ (lfp = 1) = \beta_0 + \beta_1 Poverty + \beta_2 age + \beta_3 edu2 + \beta_4 edu3 + \beta_5 health2 + \beta_6 health3 + \beta_7 male + \beta_8 pension + \beta_9 allowance + \beta_{10} support + \beta_{11} region2 + \beta_{12} region3 + \beta_{13} region4 + \beta_{14} region5 + \varepsilon$$

Where **lpf** is the labour force participant

Lfp =1 if the elderly participant in the labor force

Lfp = 0, Otherwise

Poverty is a dummy variable, where the elderly's individual's annual income lower than 30,000 Baht =1, otherwise = 0

Age is age (years) a continuous variable

Edu2 is a dummy variable, Where the elderly's individual's highest level of education secondary school =1, otherwise = 0

Edu3 is a dummy variable, Where the individual's highest level of education higher than secondary level=1, otherwise=0

Health2 is a dummy variable, where individual's health status normal =1, otherwise=0

Health3 is a dummy variable, where individual's health status bad =1, otherwise=0

Male is a dummy variable, w here is Male =1, otherwise = 0

Pension is a dummy variable, where have pension from social security, =1, otherwise=0

Allowance is a dummy variable, where have Allowance from social security, =1, otherwise=0

Support is a dummy variable, where if the individual gives financial support to their children =1, otherwise=0

Region2 is a dummy variable, where if the individual live in central =1, otherwise=0

Region3 is a dummy variable, where if the individual live in North =1, otherwise=0

Region4 is a dummy variable, where if the individual live in Northeast =1, otherwise=0

Region5 is a dummy variable, where if the individual live in South =1, otherwise=0

The Tobit regression model will be used to study the relationship between poverty and work intensity. In this regression, working days per week is the dependent variable, and independent variables include income, age, education level, health status, gender, pension and allowance, supporting children or not, living region, savings and residing alone or not. Firstly, select the elderly over 60 years old who are still participating in the labor force as research objects, and then analyze their work intensity.

$$WD = \max(0, \beta_0 + \beta_1 Poverty + \beta_2 age + \beta_3 edu2 + \beta_4 edu3 + \beta_5 health2 + \beta_6 health3 + \beta_7 male + \beta_8 pension + \beta_9 allowance + \beta_{10} support + \beta_{11} region2 + \beta_{12} region3 + \beta_{13} region4 + \beta_{14} region5 + \varepsilon)$$

Where **WD** is the working days per week

Poverty is a dummy variable, where the elderly's individual' s annual income lower than 30,000 Baht =1, otherwise = 0

Age is age (years) a continuous variable

Edu2 is a dummy variable, where the elderly's individual's highest level of education secondary school =1, otherwise = 0

Edu3 is a dummy variable, where the individual's highest level of education higher than secondary level=1, otherwise=0

Health2 is a dummy variable, where individual's health status normal =1, otherwise=0

Health3 is a dummy variable, where individual's health status bad =1, otherwise=0

Male is a dummy variable, w here is Male =1, otherwise = 0

Pension is a dummy variable, where have pension from social security =1, otherwise=0

Allowance is a dummy variable, where have Allowance from social security, =1, otherwise=0

Support is a dummy variable, where if the individual gives financial support to their children =1, otherwise=0

Region2 is a dummy variable, where if the individual live in central =1, otherwise=0

Region3 is a dummy variable, where if the individual live in North =1, otherwise=0

Region4 is a dummy variable, where if the individual live in Northeast =1, otherwise=0

Region5 is a dummy variable, where if the individual live in South =1, otherwise=0

This paper uses the survey of the elderly by the National Statistical Office of Thailand to collect data on the socioeconomic status and living arrangements, employment and income, health status and health behaviors of the elderly in Thailand 2007 and 2017.

3.2 Data sources

In this study, I used data from the National Statistics Office of Thailand, which conducts a survey every four years that collects data on the demographics, living conditions, health and welfare, economic status, and social characteristics of the population. The most recent survey, conducted in 2017, collected data on the population's age, gender, education, employment and marital status. I will use the data

from 2007 to 2017 for analysis, and the sample is limited to the elderly over 60 years old. Data on income, gender, education level, health status, pension status, working hours, etc. will be collected for estimate the relationship between poverty and elderly labor supply.

Chapter 4 Empirical Results

This chapter reports the empirical results of this study.

This paper uses the survey of the elderly by the National Statistical Office of Thailand to collect data on the socioeconomic status and living arrangements, employment and income, health status and health behaviors of the elderly in Thailand 2007, 2011, 2014 and 2017. According to the data in Table1, more than 80 percent of the elderly's highest level of education is primary school or below. The number of men is smaller than that of women, accounting for only about 45 percent. Less than 10 percent will receive pension in the coming year, which is 6.7 percent in 2007, 8.9 percent in 2011, 6.3 percent in 2014, 6.6 percent in 2017.In year 2007. In the survey sample, the proportion of people in poverty in terms of income in each year was 51.7 percent, 55.9 percent, 34.9 percent, and 39.5 percent, respectively. In the 10 years from 2007 to 2017, the proportion of elderly people living in poverty is decreasing. Their labor force participation rate has also remained consistently above 30 percent (32 percent in 2007, 37 percent in 2017, 37 percent in 2014, 32 percent in 2017). The average workdays per week at 1.995 days, 1.895 days, 1.825 days and 1.886 days respectively in these four years. Therefore, the relationship between poverty and labor supply has become a topic of great research significance.

Table 1, Description of variables

		2007		2011		2014		2017	
Variable	Description	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
lfp	A dummy that if the individual participates in work, then lfp equals 1, otherwise equals 0	0.321	0.467	0.371	0.483	0.372	0.483	0.326	0.469
WD	Working days per week, from 1–7 days	1.995	2.991	1.895	1.233	1.825	1.517	1.886	2.815
Poverty	The individual's individual's annual incomelower than 30,000 Baht	0.517	0.500	0.559	0.496	0.349	0.477	0.395	0.489
age	A continuous variable; the actual age of the respondents at the time of the survey (61 years and over)	70.92	7.503	70.79	7.726	70.63	7.725	70.715	7.849
edu	Edu1 group: individual's highest level of education primary school or below	0.848	0.359	0.860	0.347	0.859	0.348	0.873	0.333
	Edu2 group: individual's highest level of education secondary school	0.070	0.255	0.127	0.333	0.129	0.335	0.031	0.173
	Edu3 group: individual's highest level of education	0.082	0.275	0.014	0.116	0.013	0.111	0.096	0.294

Variable	Description	2007		2011		2014		2017	
		Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
	higher than secondary level								
health	Health1 group: individual's health status good	0.427	0.495	0.169	0.375	0.163	0.37	0.402	0.49
	Health2 group: individual's health status normal	0.311	0.463	0.423	0.494	0.388	0.487	0.44	0.496
	Health3 group: individual's health status bad	0.262	0.44	0.407	0.491	0.449	0.497	0.158	0.365
male	A dummy that equals 1 if the individual is male and if female equals 0	0.427	0.495	0.425	0.494	0.442	0.497	0.446	0.497
pension	A dummy that if the individual has a pension from social security, then equal to 1, otherwise 0	0.067	0.251	0.089	0.285	0.063	0.244	0.066	0.247
allowance	A dummy that if the individual has a subsistence allowance from government agencies, then equal to 1, otherwise 0	0.27	0.444	0.839	0.368	0.888	0.316	0.894	0.308
support	A dummy that if the individual gives financial support to their children, then	0.538	0.500	0.718	0.450	0.721	0.448	0.626	0.484

Variable	Description	2007		2011		2014		2017	
		Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
	equal to 1, otherwise 0								
region	Region1 Group: individual who lives in Bangkok, then equal to 1, otherwise 0	0.036	0.186	0.048	0.214	0.039	0.193	0.04	0.195

4.1 Probit Regression Results

According to result of table 2, as people get older, their willingness to work declines (Decrease by 6.7 percent, 7.9 percent, 8.1 percent and 8.2 percent in 2007, 2011, 2014 and 2017, respectively).

In the years 2007, 2011, 2014, and 2017, the likelihood of elderly individuals in poverty engaging in work was 43.9 percent, 58.5 percent, 82.7 percent, and 86.4 percent lower, respectively, compared to their non-poverty counterparts. The data provided highlights a significant disparity in labor participation between elderly individuals living in poverty and those who are not. When considering income, it becomes evident that impoverished seniors are more hesitant to engage in employment compared to their non-poverty counterparts. This phenomenon can be attributed to several key factors, as Ratnawati (2020) found, primarily centered around the limited access to social resources and job opportunities experienced by the poverty-stricken elderly. One major obstacle faced by impoverished seniors is the lack of sufficient social resources. Poverty often restricts their ability to acquire the necessary support and assistance required to secure employment. Additionally, the competitive edge of individuals in poverty within

the job market tends to be comparatively weaker. This lack of competitiveness further hampers their chances of finding suitable employment opportunities, perpetuating the cycle of poverty. Moreover, the impoverished elderly population's inability to participate in labor market competition significantly diminishes their income-earning potential. The reduced capacity to actively engage in the job market severely limits their ability to generate income, subsequently trapping them in a state of perpetual poverty. These challenges create a complex dynamic wherein impoverished elderly individuals face multiple barriers when attempting to escape poverty through labor participation. The lack of access to social resources and employment opportunities, coupled with their diminished competitiveness, compounds the difficulty of improving their economic circumstances.

In terms of education level, Arkornsakul et al., (2020) pointed out that elders with high education level are less willing to continue working than those with low education level. The main reason why elderly individuals with higher education levels are less willing to continue working compared to those with lower education levels can be attributed to a combination of factors related to financial stability, personal preferences, and social perceptions. One crucial factor is financial stability. Elderly individuals with higher education levels often have had the opportunity to pursue more financially rewarding careers throughout their working lives. As a result, they may have accumulated more savings and investments, enabling them to feel more financially secure in their retirement years. With a stronger financial foundation, they may have less of a need or desire to continue working for income. Personal preferences also play a role. Higher education levels often correspond with occupations that require a significant amount of intellectual or specialized skills. After spending many years in

demanding professions, individuals with higher education levels may feel a greater desire for leisure, personal fulfillment, or pursuing activities outside of the workforce. They may prioritize enjoying their retirement, spending time with family, engaging in hobbies, or pursuing other non-work-related interests. Social perceptions can also influence the willingness of highly educated elderly individuals to continue working. In some cultures, or societies, there may be a perception that retirement is a reward for years of hard work and that individuals with higher education levels have earned the right to retire earlier. This societal expectation or pressure to retire can influence their decision to leave the workforce, even if they may still have the capability and desire to continue working.

The results of Table 3 also verified this statement. In 2007, compared with the elderly at the highest level of education primary school or below, the willingness of the elderly at the individual's highest level of education secondary school to participate in labor decreased by 18.9 percent, and the elderly at the individual's highest level of education higher than secondary level. Willingness to participate in the labor force fell by 7.1 percent. The conclusion that the labor force participation rate of the elderly places orders with the increase of education level has also been confirmed in 2011, 2014, and 2017. Compared with the elderly at the highest level of education primary school or below, in 2011, the labor force participation rate of the elderly at the education secondary school level decreased by 44.3 percent, and that of the elderly at the education higher than secondary level decreased by 12.5 percent; in 2014, the labor force participation rate of the elderly at the education secondary school level decreased by 33.4 percent, and that of the elderly at the education higher than secondary level decreased by 20.9 percent; in 2017, the labor force participation rate of the elderly at

education secondary school level decreased by 10.5 percent, and that of the elderly at education higher than secondary level decreased by 9.5 percent. All coefficients are statistically significant.

From the perspective of the health of the elderly, Ghosh and Arokiasamy (2010) pointed out that the health status of older persons plays a crucial role in determining whether they participate in the workforce. Experimental results also confirmed this point, the healthier the elderly are, the more willing they are to provide labor. In 2007, compared with the elderly with individual's health status good, the labor force participation rate of the elderly with normal health status decreased by 23.1 percent, and the labor force participation rate of the elderly with bad health status decreased by 50.9 percent; in 2011, the labor force participation rate of the elderly with normal health status participation rate decreased by 33.2 percent, and the labor force participation rate of the elderly with a bad health status decreased by 48.5 percent; in 2014, the labor force participation rate of the elderly with a health status normal decreased by 38.3 percent, and the labor force participation rate of the elderly with a bad health status decreased by 58.5 percent; in 2017 , the labor force participation rate of the elderly with normal health status decreased by 23.4 percent, and the labor force participation rate of the elderly with bad health status decreased by 69.4 percent. This result is consistent with the finding by Paweenawat and Liao (2021) using Thai data that poorer health status negatively affects LFP.

An analysis of Thailand's labor market participation from 2007 to 2017 shows that gender differences are large, with older men having a higher proportion of labor force participation than women. This is consistent with the findings of Adhikari, Soonthorndhada, and Haseen (2011). Through this study, it was found that the labor

force participation rate of older men was 53.4 percent higher than that of women in 2007, 52.8 percent in 2011, 56.5 percent in 2014, and 62.5 percent in 2017. This trend indicates that in the elderly population, men are more likely than women to participate in labor. A variety of factors contribute to this disparity, including cultural norms, family responsibilities and older women's limited access to work opportunities or training. According to the National Statistical Office (NSO, 2005), there is a large gender gap in the percentage of people over 60 years of age doing housework: 21.8 percent for women and only 1.9 percent for men. To address this imbalance, policymakers and employers should consider measures to promote gender equality, support older women's participation in the labor market, and provide equal opportunities for skills development and employment. Such as, (1) introduce flexible work options such as part-time work, job sharing, or remote work, which can enable elderly women to balance their work and personal responsibilities more effectively. This can be particularly beneficial for those who may have caregiving responsibilities or health concerns; (2) Establish programs that provide training and skill development opportunities specifically targeted at elderly women. This can include initiatives to enhance digital literacy, technology skills, and other relevant competencies that can boost their employability in the evolving job market; (3) Raise awareness and change societal perceptions: Launch campaigns and initiatives aimed at challenging stereotypes and biases surrounding elderly women in the workforce. Highlight the valuable contributions and experiences they bring, and promote a positive image of active and productive elderly women in the labor market.

In terms of pensions and allowances, Paweenawat and Liao (2021) used LFS and SES data to find a strong association between pensions and the labor supply of the

elderly. This conclusion has also been proved in the results of this study, and the effect on the labor supply of the elderly is Large compared to other variables. Older people with pensions and government benefits are less likely to work and have a higher proportion of the labor force than pension and benefit recipients. Compared with seniors without this income, seniors receiving government benefits were 8.3 percent less likely to enter the labor force in 2007, 4.2 percent in 2011, 12.4 percent in 2014 and 7.3 percent in 2017. At present, there are still fewer informal workers in Thailand than formal sector workers, so those without pensions tend to be fewer wealthy groups, so they need to continue to participate in labor to support themselves when they are old.

Elderly people who have children at home and need financial support are more likely to go to work to provide labor. Compared with the elderly who do not need to support children at home, the labor force increased by 36.8 percent in 2007, 34.5 percent in 2011, 30.1 percent in 2014, and 30.1 percent in 2017 20.9percent, all coefficients are statistically significant.

From the perspective of geographical distribution, the elderly living in Bangkok is less willing to participate in the work than the elderly in other regions. The results from 2007, 2011, 2014 and 2017 are similar, and each coefficient is statistically significant. In 2007, the labor force participation rate of the elderly living in the south was 84.3 percent higher than that of the elderly in Bangkok, followed by the North, which was 66.4 percent higher; northeast was 64 percent higher; and the central region (excluding Bangkok) was 59.8 percent higher. In 2011, the labor force participation rate of the elderly in the Northeast was higher than that in the Bangkok region, reaching 64.5 percent, followed by the central region (excluding Bangkok) and the North, both of which remained at 57.4 percent to 54.8 percent, and finally the South, which was

54.7 percent higher than the Bangkok region. In 2014, the labor force participation rate of the elderly in Northeast was still the higher than Bangkok with 68.4 percent, followed by 72.8 percent in the North, 65.1 percent in the South, and 57.6 percent in the Central. In 2017, the labor force participation rate of the elderly in North was 66.4 percent higher than that in Bangkok, followed by Northeast with 65.5 percent, South with 65.1 percent, and Central with 50.2 percent. There are several reasons why elderly people in Thailand, except in the Bangkok area, may be more willing to participate in labor and work: (1) Economic factors: In regions outside Bangkok, there may be limited employment opportunities, particularly in sectors that require specialized skills or education. As a result, elderly individuals in these areas may feel the need to continue working to support themselves financially and meet their basic needs. (2) Social and cultural factors: Thai society places a strong emphasis on family and intergenerational support. Elderly individuals may feel a sense of duty and responsibility to contribute to their families and communities by remaining economically active. This cultural expectation, combined with the desire to maintain social connections and a sense of purpose, can motivate elderly people to continue working. (3) Lack of retirement provisions: The concept of retirement and social security benefits is not as well-established in Thailand compared to some Western countries. Many elderly individuals do not have access to comprehensive retirement plans or sufficient savings, making continued labor participation a necessity to sustain their livelihoods. In contrast, Bangkok, as the capital and economic hub of Thailand, tends to offer a wider range of job opportunities, higher wages, and better access to social services. This may lead to a higher level of retirement provisions and financial security for elderly individuals in the

city. Consequently, they may have more flexibility and choice in deciding whether to continue working or retire.

The data analysis results in Table 2 are clear, and all coefficients have maintained a certain level of significance. Among all variables, only the two variables 'edu3' and ‘allowance’ showed a slight decrease in significance levels in some years (remaining significant at the 10 percent level). This result indicates that using the Probit model to analyze the relationship between poverty and labor force particle can yield reliable results.

The findings derived from the Probit model analysis provide several key insights. Firstly, poverty status exerts a significant negative impact on the likelihood of elderly individuals participating in the labor market. Additionally, advanced age and poor health conditions are found to be significant deterrents to labor market engagement among the elderly. Furthermore, an increase in educational attainment correlates with a decrease in the likelihood of elderly individuals participating in the workforce. Gender disparities are observed, indicating that men have a higher probability of labor market participation compared to women among the elderly population. Moreover, the presence of pensions or government subsidies decreases the likelihood of elderly individuals engaging in the labor market. Conversely, when elderly individuals have dependent children requiring support, their probability of labor market participation significantly increases.

In summary, the study reveals that within the elderly population in Thailand, labor market participation is predominantly observed among non-poverty individuals with lower educational attainment, compromised physical health, limited social insurance coverage, and who needs to support for family members.

Table 2, The relationship between poverty and labour force participation (coefficients reported as marginal effects)

YEARS	2007		2011		2014		2017	
VARIABLES	Coefficient	Standard errors	Coefficient	Standard errors	Coefficient	Standard errors	Coefficient	Standard errors
constant	3.630***	(0.116)	4.304***	(0.107)	4.253 ***	(0.109)	4.861***	(0.111)
poverty	-0.439***	(0.018)	-0.585***	(0.013)	-0.827***	(0.018)	-0.864***	(0.020)
age	-0.067***	(0.002)	-0.079***	(0.001)	-0.081***	(0.001)	-0.082***	(0.001)
edu2	-0.189***	(0.038)	-0.443***	(0.037)	-0.334***	(0.020)	-0.105**	(0.047)
edu3	-0.071*	(0.037)	-0.125*	(0.086)	-0.209*	(0.075)	-0.095***	(0.037)
health2	-0.231***	(0.020)	-0.332***	(0.021)	-0.383***	(0.022)	-0.234***	(0.018)
health3	-0.509***	(0.023)	-0.485***	(0.021)	-0.585***	(0.021)	-0.694***	(0.030)
male	0.534***	(0.018)	0.528***	(0.013)	0.565***	(0.016)	0.625***	(0.017)
pension	-1.272***	(0.048)	-1.134***	(0.032)	-1.524***	(0.057)	-1.430***	(0.059)
allowance	-0.083***	(0.021)	-0.042*	(0.026)	-0.124***	(0.023)	-0.073**	(0.036)
support	0.368***	(0.018)	0.345***	(0.017)	0.301***	(0.017)	0.209***	(0.017)
region2	0.598***	(0.056)	0.547***	(0.029)	0.576***	(0.031)	0.502***	(0.050)
region3	0.664***	(0.057)	0.548***	(0.030)	0.651***	(0.031)	0.651***	(0.051)
region4	0.640***	(0.057)	0.645***	(0.030)	0.728***	(0.031)	0.664***	(0.050)
region5	0.843***	(0.058)	0.574***	(0.032)	0.684***	(0.033)	0.655***	(0.052)
Pseudo R2	0.1900		0.2490		0.2940		0.3001	
Obs	27,767		31,454		35,896		34,883	

4.2 Tobit Regression Results

Table 3 shows the results of Tobit regression. Comparing the data of 2007, 2011, 2014 and 2017, we can find that most explanatory variables are significant, and only a few explanatory variables are not significant. There are two coefficients are

insignificant in year 2014 and 2017, but the sign of these coefficients stays the same with other years. The coefficient of “edu2” in year 2017 and coefficient of “edu3” in year 2014 are not significant. According to Acemoglu & Autor (2011), The potential benefits of higher education for workers in manual labor occupations are somewhat uncertain in terms of return on investment. Except for these two variables, the coefficients of all variables are statistically significant.

$$WD = \max(0, \beta_0 + \beta_1 Poverty + \beta_2 age + \beta_3 edu2 + \beta_4 edu3 + \beta_5 health2 + \beta_6 health3 + \beta_7 male + \beta_8 pension + \beta_9 allowance + \beta_{10} support + \beta_{11} region2 + \beta_{12} region3 + \beta_{13} region4 + \beta_{14} region5 + \varepsilon)$$

Form the Tobit regression equation listed in Chapter 3, in 2007, the elderly who belongs to poverty group, 61 years old, the lowest education level, good health, female, no pension, no government allowance, no need to support children, and living in Bangkok worked an average of 1.384 (WD = 8.642 - 0.914 - 61 * 0.104, the lowest education level, good health, female, no pension, no government allowance, no need to support children, and living in Bangkok are all Dummy Variables = 0)days per week; In 2011, the elderly with the same conditions worked 2.606 (WD = 2.755 – 0.027 - 61 * 0.002) days a week; In 2014, the elderly with the same conditions worked 0.65 (WD = 4.705 – 0.578 - 61 * 0.057) days a week; In 2017, the elderly with the same conditions worked 1.27 (WD = 8.805 – 1.435 - 61 * 0.100) days a week. It can be seen that the average number of working days per week for the elderly in 2017 is decreasing compared with 2007 under the same conditions. However, when comparing the data from 2011 and 2014, it was found that there were significant changes in the number of working days per week for the elderly in each year, indicating that their living and employment conditions fluctuated significantly over the past 10 years.

The research findings suggest that elderly individuals in poverty worked fewer weekly days compared to those who were not in poverty, during the years 2007, 2011, 2014, and 2017. The Tobit model analysis revealed that the coefficients associated with the dummy variable "poverty" were -0.914, -0.027, -0.578, and -1.435 for the respective years. It means In 2007, 2011, 2014, and 2017, the elderly in poverty worked 0.914 days, 0.027 days, 0.578 days, and 0.1435 days less per week than those without poverty. Among these coefficients, only the coefficient for the year 2011 showed statistical significance at the 10 percent level, whereas the remaining coefficients exhibited statistical significance at the 1 percent level.

As the age increases, the number of working days per week is decrease, this coefficient was significant in all four years, which is decrease 0.104 day in 2007, 0.002 day in 2011, 0.057 day in 2014 and 0.100 day in 2017.

The elderly who are not healthy or who have ailments work less days per week than healthy elderly. Compared with the elderly with individual's health status good, in 2007, 2011, 2014 and 2017, the elderly with individual's health status normal worked less on average of 0.482 days, 0.086 days, 0.192 days and 0.478 days less per week, and individual's health older people with bad status work less on average 0.899 days, 0.063 days, 0.345 days and 0.914 days per week.

In 2007, elderly men worked much more days per week than women, and in 2017, this trend was still obvious. The elderly who gets a pension works less than those who do not, works less on average 2.213 days, 0.055 days, 1.111days and 2.153days in 2007, 2011, 2014 and 2017.

In 2007, the elderly who were eligible for government allowance were less eager to work more days, which is 0.213 days in 2007, 0.228 days in 2011 and 0.213 days in

2014, and 0.155 days in 2017. The requirement for financial assistance for children has a significant effect on the number of working days per week of the elderly, which is work more 0.646 days, 0.179 days, 0.211 days and 0.304 days per week in 2007, 2011, 2014 and 2017. Regarding regional distribution, the coefficient is significant for all region groups. In 2017, the elderly in other places worked more days than the elderly in Bangkok. In 2007, compared with the elderly in Bangkok, the elderly in the south worked an average of 1.283 days more per week, the elderly in the northeast worked an average of 1.107 days more, the elderly in the north worked an average of 1.054 days more, and the elderly in the central area worked 0.962 days more. In 2011, compared with the elderly in Bangkok, the elderly in the south worked an average of 0.555 days more per week, the elderly in the northeast worked an average of 0.612 days more, the elderly in the north worked an average of 0.549 days more, and the elderly in the central area worked0.484 days more. In 2014, compared with the elderly in Bangkok, the elderly in the south worked an average of 0.305 days more per week, the elderly in the northeast worked an average of 0.325 days more, the elderly in the north worked an average of 0.342 days more, and the elderly in the central area worked 0.381days more. In 2017, compared with the elderly in Bangkok, the elderly in the south worked an average of 0.752 days more per week, the elderly in the northeast worked an average of 0.951 days more, the elderly in the north worked an average of 0.944 days more, and the elderly in the central area worked 0.781 days more.

The findings obtained from the analysis using the Tobit model yield the following key observations. Firstly, elderly individuals experiencing poverty exhibit fewer weekly workdays. Moreover, advanced age and higher educational attainment correspond to reduced weekly working hours among the elderly. Additionally, the

health status of elderly individuals exerts a significant negative influence on their weekly work hours. When considering gender differences, elderly men in Thailand tend to work longer hours per week compared to women. Furthermore, the provision of pensions or government subsidies to elderly individuals in Thailand significantly reduces their weekly working hours. Conversely, if there are dependent children in the family requiring support from the elderly, the number of weekly workdays among the elderly significantly increases.

In summary, within the elderly population of Thailand, individuals who are not impoverished, possess lower educational attainment, enjoy good physical health, lack social insurance coverage, and do not require household subsidies are more likely to work longer hours per week. For elderly individuals in Thailand with lower educational levels and without pension or government subsidies, working longer hours becomes necessary to sustain their livelihood. Simultaneously, the Thai government has implemented subsidy policies targeting the impoverished population, leading to some impoverished elderly individuals opting out of labor market participation.

Table 3, Tobit regression results (coefficients reported as marginal effects)

YEARS	2007		2011		2014		2017	
VARIABLES	Coefficient	Standard errors	Coefficient	Standard errors	Coefficient	Standard errors	Coefficient	Standard errors
constant	8.642***	(0.167)	2.755***	(0.083)	4.705***	(0.089)	8.805***	(0.143)
poverty	-0.914***	(0.035)	-0.027*	(0.021)	-0.578***	(0.015)	-1.435***	(0.027)
age	-0.104***	(0.002)	-0.002***	(0.001)	-0.057***	(0.001)	-0.100***	(0.001)

edu2	-0.277***	(0.071)	-0.304***	(0.045)	-0.322***	(0.035)	-0.125	(0.084)
edu3	-0.236***	(0.064)	-0.209**	(0.106)	-0.124	(0.105)	-0.600***	(0.063)
health2	-0.482***	(0.039)	-0.086***	(0.024)	-0.192***	(0.019)	-0.478***	(0.028)
health3	-0.899***	(0.040)	-0.063**	(0.025)	-0.354***	(0.020)	-0.914***	(0.040)
male	1.000***	(0.034)	0.068***	(0.016)	0.301***	(0.015)	0.964***	(0.026)
pension	-2.213***	(0.069)	-0.055*	(0.041)	-1.111***	(0.044)	-2.153***	(0.082)
allowance	-0.213***	(0.037)	-0.228***	(0.028)	-0.213***	(0.032)	0.155**	(0.057)
support	0.646***	(0.032)	0.179***	(0.151)	0.211***	(0.015)	0.304***	(0.046)
region2	0.962***	(0.091)	0.484***	(0.047)	0.381***	(0.043)	0.781***	(0.069)
region3	1.054***	(0.093)	0.549***	(0.048)	0.342***	(0.042)	0.944***	(0.070)
region4	1.107***	(0.094)	0.612***	(0.047)	0.325***	(0.042)	0.951***	(0.069)
region5	1.283***	(0.096)	0.555***	(0.049)	0.305***	(0.045)	0.752***	(0.073)
Obs	27,767		31,454		35,896		34,883	

Chapter 5 Conclusion

5.1 Discussion and Conclusion

This article presents an examination of the influence of poverty on the labor participation rate of elderly individuals in Thailand, as well as the association between poverty and work intensity. Through Probit analysis, it was determined that poverty exerts a detrimental effect on labor participation among the elderly population. Specifically, when elderly individuals find themselves in a state of poverty, their willingness to engage in labor diminishes further. Furthermore, when applying the Tobit model, it becomes evident that elderly individuals living in poverty experience a reduction in working hours.

Likewise, various demographic and socio-economic factors demonstrate a negative correlation with labor supply. Age, education level, health status, and the availability of pensions and allowances all display an inverse relationship with labor participation. As age increases, education level rises, and health status deteriorates, elderly individuals exhibit lower levels of labor engagement. Moreover, those without access to pensions and allowances tend to have lower labor participation rates and work for fewer hours.

The findings of this study shed light on the multifaceted dynamics at play when examining the relationship between poverty and labor participation among the elderly in Thailand. The negative impact of poverty on labor participation underscores the challenges faced by impoverished elderly individuals in accessing employment opportunities. Economic constraints, limited resources, and potentially diminished

health status contribute to the reduced labor force participation of this vulnerable population segment.

Furthermore, the study's identification of additional factors, such as age, education level, health status, and pension availability, provides a more comprehensive understanding of the complexities involved in elderly labor supply. These findings highlight the importance of considering a wide range of determinants beyond poverty alone when exploring labor force participation patterns among the elderly.

The implications of these findings have significant policy implications. Addressing poverty among the elderly population should be a priority to promote their labor force participation and enhance their overall well-being. Strategies aimed at reducing poverty levels and improving access to education, healthcare, and social support systems can help foster greater labor force engagement among the elderly. Additionally, the provision of adequate pension schemes and allowances can offer financial stability and incentives for continued labor participation.

In conclusion, this study demonstrates that poverty has a detrimental effect on labor participation among elderly individuals in Thailand. It reveals the significant relationship between poverty and reduced working hours. The analysis also highlights the negative correlations between age, education level, health status, and the availability of pensions and allowances with labor supply. By considering these factors, policymakers can develop targeted interventions to alleviate poverty, enhance labor force participation, and improve the well-being of the elderly population.

5.2 Limitation of study

On the one hand, due to limitations in the data sample, the collected data for each year cannot form panel data. Therefore, a detailed analysis of panel data is not possible, making it difficult to draw more accurate conclusions.

The inability to construct panel data sets due to limitations in the data sample restricts us from conducting a comprehensive analysis and detailed observations. The use of panel data provides more information and enables us to derive more precise conclusions, as it allows us to track the changes of individuals or observational units over time. By collecting data continuously over multiple years, we can better understand and reveal the relationships between variables and their dynamic changes. However, in this study, the lack of panel data constrains us, limiting our ability to explore trends and changes between years in depth. Therefore, our conclusions may not be as accurate and comprehensive.

Although panel data analysis has advantages, in certain situations, ideal data structures cannot be achieved due to limitations in data collection. Possible reasons include limited time range for data collection or constraints in resources, time, and costs that prevent the collection of data over consecutive years. Hence, it is important to acknowledge these limitations in the study and explicitly state the reasons for not being able to conduct panel data analysis.

Despite these limitations, we can still utilize existing cross-sectional data to perform cross-year comparisons and observe trends. By making reasonable use of available data, we can make preliminary assessments of the relationships between variables through cross-sectional comparisons and longitudinal observations. However,

it is important to recognize the inability to observe individual-level changes and trends, which may impact the accuracy and comprehensiveness of our conclusions.

Therefore, to derive more accurate and comprehensive conclusions, future research can focus on collecting more data to establish panel data sets. This will facilitate a better understanding of the relationships between variables and their changes over time, providing researchers with more reliable evidence and deeper insights. There may be some endogeneity issues with variables when establishing the model in this article. If more comprehensive Panel data is used in subsequent research, more means can be used to avoid variable endogeneity problems in the model.

On the other hand, the content studied in this paper involves the definition of poverty. Due to objective factors and limitations in data coverage, this study can only use individual annual income as a measure of poverty. However, poverty is a complex issue that encompasses multidimensional aspects of poverty measurement and also involves the issue of poverty persistence (dynamic problem).

Measuring poverty solely based on individual annual income has its limitations. Poverty is not solely determined by income alone; it also encompasses other dimensions such as access to education, healthcare, basic amenities, and social support systems. Poverty is a multidimensional phenomenon that requires a comprehensive assessment considering various indicators and factors. By focusing solely on income as a measure of poverty, other crucial aspects may be overlooked, providing an incomplete understanding of the poverty situation.

Additionally, poverty is not a static condition but can exhibit persistence over time. Understanding poverty dynamics requires examining factors such as intergenerational transmission of poverty, duration of poverty spells, and mobility in

and out of poverty. A comprehensive analysis of poverty should take into account not only the current income status but also the trajectories and transitions individuals or households experience in and out of poverty.

While this study acknowledges the limitations of using income as the sole indicator of poverty, it is important to recognize the complexities and dynamic nature of poverty. Future research could consider incorporating a multidimensional approach to poverty measurement, which would involve assessing a broader range of factors and indicators to capture the various dimensions of poverty. Moreover, incorporating longitudinal data and examining poverty dynamics would provide a more comprehensive understanding of the nature and persistence of poverty over time. By considering these aspects, researchers can obtain a more nuanced and holistic understanding of poverty and its implications for individuals and societies.

In addition, the research in this paper does not involve the jobs and job nature (full-time or part-time) of the elderly labor force. However, combining the results obtained in this paper, and the older people with a high level of education are more likely to occupy high positions proposed by Arkornsakul et al., (2020), I think that there is a relationship between the jobs of the elderly and labor supply relationship is also a topic worthy of study.

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